

What is Claimed is:

1        1. A passivation layer for packaging organic electroluminescent (EL) components,  
2        the passivation layer being a polymer passivation layer or a wet-adsorption polymer  
3        passivation layer comprising:

4                at least a wet-adsorption or an inorganic filler agent; and  
5                at least a solvent or nonsolvent, thermo-curing or UV-curing polymer  
6        material;

7                wherein the filler agent is blended with a polymer material to form a wet-  
8        adsorption polymer protective layer for filling up or overlaying the organic EL  
9        components.

1        2. The wet-adsorption polymer passivation layer according to claim 1, wherein the  
2        addition ratio of the filler agent and the high molecular material are 1 ~ 90%  
3        respectively so as to produce the wet-adsorption polymer protective layer.

1        3. The wet-adsorption polymer passivation layer according to claim 1, wherein the  
2        polymer material is any of Epoxy, Acrylic, Urethane, Epoxy/Acrylic,  
3        Acrylic/Urethane, Silicone, Silioxane, or Organic/Inorganic hybrid.

1        4. The wet-adsorption polymer passivation layer according to claim 1, wherein a  
2        wet-adsorption material of the filler agent is either a physical or a chemical  
3        adsorption material; and the grain size of the filler agent is about 0.1 mm ~ 10  $\mu\text{m}$ .

1        5. The wet-adsorption polymer passivation layer according to claim 4, wherein the  
2        chemical adsorption is at least a compound of the following: namely, an alkali  
3        metallic oxide, an alkaline earth metallic oxide, a sulfate compound, a halogen  
4        metallic compound, or a perchlorate compound.

1       6. The wet-adsorption polymer passivation layer according to claim 4, wherein the  
2       alkali metallic oxide is either K<sub>2</sub>O or Na<sub>2</sub>O.

1       7. The wet-adsorption polymer passivation layer according to claim 4, wherein the  
2       alkaline earth metallic oxide is CaO, BaO, or MgO.

1       8. The wet-adsorption polymer passivation layer according to claim 4, wherein the  
2       sulfate compound is Li<sub>2</sub>SO<sub>4</sub>, Na<sub>2</sub>SO<sub>4</sub>, MgSO<sub>4</sub>, CoSO<sub>4</sub>, Ga<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>, Ti(SO<sub>4</sub>)<sub>2</sub>, or  
3       NiSO<sub>4</sub>.

1       9. The wet-adsorption polymer passivation layer according to claim 4, wherein the  
2       halogen metallic compound is CaCl<sub>2</sub>, MgCl<sub>2</sub>, SrCl<sub>2</sub>, YCl<sub>2</sub>, CuCl<sub>2</sub>, CsF, TaF<sub>5</sub>, NbF<sub>5</sub>,  
3       CaBr<sub>2</sub>, CsBr<sub>3</sub>, SeBr<sub>4</sub>, VBr<sub>2</sub>, MgBr<sub>2</sub>, BaI<sub>2</sub>, or MgI<sub>2</sub>.

1       10. The wet-adsorption polymer passivation layer according to claim 4, wherein  
2       the perchlorate compound is either Ba(ClO<sub>4</sub>)<sub>2</sub> or Mg(ClO<sub>4</sub>)<sub>2</sub>.

1       11. The wet-adsorption polymer passivation layer according to claim 1, wherein  
2       the thermal expansion coefficient of the passivation layer is located in the range of  
3       1 ~100 ppm/<sup>o</sup>C, however, 5 ~20 ppm/<sup>o</sup>C is preferable.

1       12. The wet-adsorption polymer passivation layer according to claim 1, which is  
2       formed by way of spraying, screen-printing, dispensing, or spincoating so as to fill  
3       up or overlay the EL components.

1       13. A method for packaging organic electroluminescent (EL) components with  
2       polymer passivation layer, comprising:

3               plating at least a wet-adsorption passivation layer on a flexible substrate  
4       made in glass, metal, or plastics;

5               forming a plurality of organic EL component's pixels and cathode

6       separators on the substrate, wherein at least a sub-layer of the passivation layer is a  
7       polymer layer; and the passivation layer is applied to fill up the gaps between the  
8       pixels and the cathode separators; and

9               sealing the surface of the entire passivation layer by overlaying a package  
10      material thereon.

1       14. The method for packaging organic EL components according to claim 13,  
2       wherein the wet-adsorption passivation layer is composed of:

3               a polymer material, which is a solvent or nonsolvent, thermo-curing or UV-  
4       curing, organic or Inorganic material; and

5               a filler agent, which is a wet-adsorption material or an inorganic material.

1       15. The method for packaging organic EL components according to claim 13,  
2       wherein the wet-adsorption passivation layer is formed by spraying, screen-  
3       printing, dispensing, or spincoating to produce a plurality of mask patterns for  
4       overlaying the EL components.

1       16. The method for packaging organic EL components according to claim 15,  
2       wherein the amount of mask pattern is equal to that of the EL component's  
3       domains; and each mask pattern is slightly larger than a paired off domain in area  
4       occupied at a correspondent position.

1       17. The method for packaging organic EL components according to claim 13,  
2       wherein the thickness of the polymer passivation layer should never be thinner than  
3       the height of the cathode separators and is controlled preferably between 1 ~ 1000  
4       μm.

1       18. The method for packaging organic EL components according to claim 13,

2 wherein the package material is an Epoxy gel, an Acrylic gel, a Silicone gel, or any  
3 of various thermo-curing or UV-curing materials.

1 19. A package structure for organic EL components with polymer or wet-  
2 adsorption polymer passivation layer, comprising:

3 a flexible substrate made in glass, metal or plastics, having a plurality of  
4 organic EL component's pixels and cathode separators disposed thereon, an  
5 Indium-Tin oxide (ITO) anode layer formed between the substrate and the pixels to  
6 serve as an anode of the latter, wherein a cathode layer is laid on each pixel;

7 at least a polymer or a wet-adsorption polymer passivation layer being  
8 formed directly between the pixels and the cathode separators and on surface of the  
9 pixels; an optional inorganic or metallic layer being formed in an arbitrary order on  
10 top of the wet-adsorption polymer passivation layer depending on requirements;  
11 and

12 a polymer package layer for sealing the entire surface of the passivation  
13 layer, or the inorganic and/or the metallic layer if applied.

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